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09/197,096	11/20/1998	MARK ALISTAIR POLETTI	0805774-0001	9905

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CHOATE HALL & STEWART
EXCHANGE PLACE
53 STATE STREET
BOSTON, MA 021092891

EXAMINER	
LAO, LUN S	
ART UNIT	**PAPER NUMBER**
2643	13

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 09/197,096	Applicant(s) POLETTI, MARK ALISTAIR
	Examiner Lun-See Lao	Art Unit 2643

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13 and 21-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13 and 21-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Introduction

1. This action responds to amendment filed on 06-11-2003. Claims 1-12 and 14-20 are cancelled and claims 13 and 21-41 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Orban (US PAT. 4,412,100) in view of Koichiro (JP404142598A)

Regarding claim 13, Orban teaches that preamplifier comprising:

a filtering means (see fig.3 (12,14 and 50,51)) for splitting an input signal into a multiple number of separate frequency bands, comprising a cascade of ($2^N - 1$) pairs of even poled low and high pass filters (12,14 and 50,51) arranged such that each pair splits the incoming frequency band in two (52,58 and 53,54, and 16,11 and 45,47), where N is the number of stages of pairs in the cascade, each low and high pass filter pair forming a state variable filter, and in each nth stage subsequent to the first, each low or high pass filter pair is preceded by (2^{n-1} -1) all pass filters having phase responses of the (2^{n-1} - 1) low or high pass filter pairs (12,14 and 16,11 and 47, 45 and,

and 50,51 and 52,58 and 53,56) in the other channels such that the phase response of each stage is similar for each frequency band, and a multiple number of non-linear circuits (15,21,27), each arranged to distort the input signal component of one of the frequency bands (see col.4 lines 25-56); and

a summing (19,25) network for recombining said frequency bands including low pass filtering means (14,16,11,17,25) arranged such that in successive stages the lowest frequency band is low pass filtered with a low pass filter and the other frequency bands are all pass filtered with an all pass filter corresponding to said low lass filter, said lowest frequency band is then combined with the next lowest frequency band and subsequent stages of repeated filtering and combining until all frequency bands are combined, such that the phase response over all frequency bands through the low pass filtering and summing (19,25) network is identical (col.5 lines 44-col.6 line 57), but Orban fails to teaches that filtering means further comprising variable cross-mixing after one or more of said stages of filtering,

However, Koichiro teaches that filtering means further comprising variable cross-mixing after one or more of said stages of filtering (see fig.2).

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Koichiro into Orban to provide pseudostereo phonic sound for the system.

4. Claims 21,24-25,28, 30-33,35-36,38,40, are rejected under 35 U.S.C. 103(a) as being unpatentable over Maag (US PAT. 5,892,833) in view of Levine (US PAT. 5,848,164).

Regarding claim 21, Maag teaches that a musical instrument preamplifier system comprising:

a filtering means (see fig.6a, 208) for splitting an input signal into two or more separate frequency bands (212a-212n) comprising a substantially equi-phase response for each frequency band; in order to obtain a minimum (or little) phase shift, filters 211a-212n would have substantially the same phase shift. The filters 211a-212n are identical and using the same components. With the circuit configuration described, phase distortion (phase shift) is reduced, with the center frequencies having substantially no phase shift when measured at the output of each band (see col.4 line 33-col.5 line 24), but Magg does not teach clearly two o or more non-linear circuits, each of which distorts one of the frequency bands; and a summing network for recombining said frequency bands.

However, Levine teaches two o or more non-linear circuits (see fig.7, (701-703)), each of which distorts one of the frequency bands (703); and a summing (synthesis filter bank) network for recombining said frequency bands (abstract)

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Levine into Maag to provide a sound system designer with a set of prototype subband effects filters that can be customized by the sound system designer.

Regarding claim 24-25, Maag teaches that a musical instrument preamplifier system of each low and high pass filter pair is a state variable filter (see col.3 lines 1-30).

Regarding claim 28, Levine teaches that musical instrument preamplifier system of low pass filtering means (see fig.7, synthesis filter) after said non-linear circuits (701-703) to reduce high frequency distortion products.

Regarding 30-32, Magg teaches that a musical instrument preamplifier system of the non-linear circuit (see fig.6a, (211a –212n and 215a,b, 216a-n) for each frequency band has a different gain than those in the other frequency bands; and non-linear circuits (see fig.6a, (211a –212n and 215a,b, 216a-n) for higher frequency bands have a higher minimum gain than the non-linear circuits for lower frequency bands; and the distortion by said non-linear circuits is variable (see fig.6a, (211a –212n and 215a,b,216a-n).

Regarding claim 33, Maag teaches that a digital musical instrument preamplifier system comprising:

a digital filtering means (see fig.6a, 208) for splitting an input signal into two or more separate frequency bands (212a-212n) comprising a substantially equi-phase response for each frequency band; in order to obtain a minimum (or little) phase shift, filters 211a-212n would have substantially the same phase shift. The filters 211a-212n are identical and using the same components. With the circuit configuration described, phase distortion (phase shift) is reduced, with the center frequencies having substantially no phase shift when measured at the output of each band (see col.4 line 33-col.4 line24), but Magg does not teach clearly two o or more non-linear circuits, each

of which distorts one of the frequency bands; and a digital summing network for recombining said frequency bands.

However, Levine teaches two o or more non-linear circuits (see fig.7, (701-703)), each of which distorts one of the frequency bands (703); and a digital summing (synthesis filter bank) network for recombining said frequency bands (abstract)

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Levine into Maag to provide a sound system designer with a set of prototype subband effects filters that can be customized by the sound system designer.

Regarding claims 35-36, Maag teaches that a digital musical instrument preamplifier each digital low pass and high pass filter (see fig.6a (211a-b and 212a –n)) is obtained by a bilinear transformation of a corresponding low pass and high pass analogue filter (see fig.1), and the all pass filters are obtained by a bilinear transformation of a corresponding all pass analogue filter; and digital filtering means comprises linear phase finite impulse response filters (see col.7 lines 50-67).

Regarding claim 38, Maag teaches that a digital musical instrument preamplifier of digital low pass filtering means (see fig.6a (211a-b and 212a –n)) after said digital non-linear circuits (see fig.6a (211a-b and 212a –n and 215a-b, 216a-n)) reduce high frequency distortion products.

Consider claim 40, Maag teaches that a musical instrument preamplifier comprising:

a filtering means (see fig.6a, 208) with a first filter network, the network including:

an input (208),

a plurality of outputs (212a-212b), and

a plurality of outputs, and a plurality of band splitter filters (212a-212n) to split a signal on the input into a plurality of substantially equi-phase frequency bands; in order to obtain a minimum (or little) phase shift, filters 211a-212n would have substantially the same phase shift. The filters 211a-212n are identical and using the same components. With the circuit configuration described, phase distortion (phase shift) is reduced, with the center frequencies having substantially no phase shift when measured at the output of each band for the output (see col.4 line 33-col.5 line24), but Magg does not clearly teach a plurality of non-linear circuits coupled to a plurality of the outputs to distort respective output frequency bands.

However, Levine teaches a plurality of non-linear circuits (see fig 7 (701,702,703)) coupled to a plurality of the outputs to distort respective output frequency bands (see col.7 line 1-19).

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Levine into Maag to provide a sound system designer with a set of prototype subband effects filters that can be customized by the sound system designer.

5. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maag (US PAT. 5,892,833) as modified by Levine (US PAT. 5,848,164), and further in view of Orban (US PAT. 4,412,100).

Consider claim 41, Maag teaches a musical instrument preamplifier system comprising:

a filtering means (see fig.6a (208)) for splitting an input signal into plurality of substantially equi-phase frequency band outputs (212a-212n); in order to obtain a minimum (or little) phase shift, filters 211a-212n would have substantially the same phase shift. The filters 211a-212n are identical and using the same components. With the circuit configuration described, phase distortion (phase shift) is reduced, with the center frequencies having substantially no phase shift when measured at the output of each band for the output (see col.4 line 33-col.5 line24), but Magg does not clearly teach a plurality of non-linear circuits coupled to filter means to distort respective output frequency bands.

However, Levine teaches a plurality of non-linear circuits (see fig 7 (701,702,703)) coupled to filter means to distort respective output frequency bands (see col.7 line 1-19).

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Levine into Maag to provide a sound system designer with a set of prototype subband effects filters that can be customized by the sound system designer.

On the other hand, Maag teaches one or more of the subsequent networks (see fig.6a (208,212, 216, 220, 224)), the input of each is coupled to one output of another network via a filter to provide substantially equi-phase frequency bands (212a-212n) on the network's outputs; in order to obtain a minimum (or little) phase shift, filters 211a-212n would have substantially the same phase shift. The filters 211a-212n are identical

and using the same components. With the circuit configuration described, phase distortion (phase shift) is reduced, with the center frequencies having substantially no phase shift when measured at the output of each band for the output (see col.4 line 33-col.5 line24), but Magg does not clearly teach the filtering means includes a cascade of a first filter network, and one or more subsequent filter networks, each network including: an input, a plurality of outputs, and a plurality of band splitter filters to split a signal on the input into a plurality of frequency bands for the outputs, and wherein outputs of some of the networks form frequency band outputs of the filter means.

However, Orban teaches that that the filtering means includes a cascade of a first filter network, and one or more subsequent filter networks, each network including:

an input (see fig.3, in), a plurality of outputs (10), and a plurality of band splitter filters (14,16,51,52) to split a signal on the input into a plurality of frequency bands for the outputs, wherein for one or more of the subsequent networks, and wherein outputs of some of the networks form frequency band outputs of the filter means (see fig.3).

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Maag into the teaching of Orban, so that the system provide the signal processor can generally be described as a distributed crossover system for use with bandpass filters containing internal clippers. A unique (series/parallel) crossover configuration with favorable summation of properties is used.

6. Claims 22-23, 29,34, 39, are rejected under 35 U.S.C. 103(a) as being unpatentable over Maag et al (US PAT. 5,892,833) and Levine (US PAT. 5,848,164) as applied to claims 21,33, and further in view of Orban (US PAT .4,412,100).

Regarding claims 22,33, Maag and Levine differs from claims 22,34 in not disclosing that a musical instrument preamplifier of filtering means comprises a cascade of 2^N - 1 pairs of even-poled low and high pass filters arranged such that each pair splits the incoming frequency band in two, where N is the number of stages of pairs in the cascade, and wherein for the nth stage subsequent to the first, each low or high pass filter pair is preceded by (2^{n-1} - 1) all pass filters with phase response corresponding to the (2^{n-1}- 1) other low and high pass filter phase response in that stage such f hat the phase response of each stage is similar for each frequency band.

However, Orban teaches that a musical instrument preamplifier of filtering means comprises a cascade of 2^N - 1 pairs of even-poled low and high pass filters (see fig.3, (12,14 and 50,51)) arranged such that each pair splits the incoming frequency band in two (16,11 and 45,47, and 52,58 and 53,54), where N is the number of stages of pairs in the cascade, and wherein for the nth stage subsequent to the first, each low or high pass filter pair is preceded by (2^{n-1} - 1) all pass filters (12,47 and 50,54) with phase response corresponding to the (2^{n-1}- 1) other low and high pass filter phase response in that stage such f hat the phase response of each stage is similar for each frequency band (see col.3 line 19-col.4 line 23).

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Maag and Livine into the teaching of Orban, so that the system provide the

signal processor can generally be described as a distributed crossover system for use with bandpass filters containing internal clippers. A unique (series/parallel) crossover configuration with favorable summation of properties is used.

Regarding claim 23, Orban teaches that a musical instrument preamplifier system of cascade has two stages of two pole low (see fig.3, (14,16,11,53,56) and high (51, 52,58,45,35) pass filter pairs.

Regarding claims 29,39, Orban teaches that a musical instrument preamplifier system of low pass filtering means (see fig.3, (14,16,11,17,25)) is combined with said summing network (19,25) such that it successive stages the lowest frequency band is low pass filtered with a low pass filter and the other frequency bands are all pass filtered (12,47,50,54) with an all pass filter corresponding to said low pass filter, said lowest frequency band is then combined with the next lowest frequency band, and comprising subsequent stages of repeated filtering and combining until all frequency bands are combined, such that the phase response over all frequency bands through the low pass filtering and summing (19,25,31) network is identical.

7. Claims 26-27,37, are rejected under 35 U.S.C. 103(a) as being unpatentable over Maag et al (US PAT. 5,892,833) and Levine (US PAT. 5,848,164) as applied to claims 21,33, and further in view of Koichiro (JP404142598A)

Regarding claims 26-27,37 Maag and Levine differ from claims 26-27,37 in not disclosing that musical instrument preamplifier system of the filtering means further comprises variable cross-mixing after one or more stages Of said filtering means.

However, Koichiro teaches that musical instrument preamplifier system of the filtering means further comprises variable cross-mixing after one or more stages of said filtering means (see fig.2).

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Maag and Kuroki into the teaching of Koichiro, so that the system provide pseudostereo phonic sound.

Response to Arguments

8. Applicant's arguments with respect to claims 13 and 21-41 have been considered but are moot in view of the new ground(s) of rejection.

As to the argument on page 12, third paragraph. In Orban, filter pairs (12,14) and filter pair (50,51) are the stage one of the cascade. In the stage two, filter pairs (12,14) are split into two pairs (16,11) and (45,47), and filter pair (50,51) is split into two pairs (53,54) and (52,58). Orhan meets " a filtering means for splitting an input signal into a multiple number of separate frequency bands, comprising a cascade of ($2^N – 1$) pairs of even poled low and high pass filters arranged such that each pair splits the incoming frequency band in two, where N is the number of stages of pairs in the cascade, each low and high pass filter pair forming a state variable filter, and in each nth stage subsequent to the first, each low or high pass filter pair is preceded by (2^{n-1} -1) all pass filters having phase responses of the (2^{n-1} - 1) low or high pass filter pairs in the other channels" as claimed.

Conclusion

9. Any response to this action should be mailed to:

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Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (703) 305-2259 The examiner can normally be reached on Monday-Friday from 8:00 to 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be reached on (703) 305-4708.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (703) 306-0377.

Lao, Lun-See
Patent Examiner
US Patent and Trademark Office
Crystal Park 2
(703305-2259

DUC NGUYEN
PRIMARY EXAMINER